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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
POLYZOS, FAYE S	

ART UNIT	PAPER NUMBER
2884	

DATE MAILED: 11/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/667,466	HEISMANN ET AL.
	Examiner	Art Unit
	Faye Polyzos	2884

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/23/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4,6-7,11-12,14-15,17-18 and 25-30 are rejected under 35 U.S.C. 102(b) as being anticipated by *Sones et al (US 4,709,382).*

Regarding claim 1, Sones discloses an image detector for detecting electromagnetic radiation, comprising: a carrier layer (86); and a photosensor (individual detector elements), carried by the carrier layer, wherein each of the carrier layer and photosensor include a nonvanishing transparency to the electromagnetic radiation, and wherein at least two carrier layers (86)(88) and corresponding photosensors (individual detector elements) are arranged one above the other, such that the electromagnetic radiation is passable through them one after the other (See Generally Figs. 3-6 and col. 9, lines 63-68 and col. 10, lines 1-15).

Regarding claim 2, Sones discloses the image detector wherein each carrier layer (92)(94) carries a plurality of photosensors (96), arranged spatially on a respective carrier layer, wherein the plurality of photosensors are adapted to generate electrical signals in a manner dependent on the detection of electromagnetic radiation, and wherein the plurality of photosensors are jointly electrically contact-connected at least one of individually and within individual areas, so that the electromagnetic radiation is

adapted to be detected in spatially resolved fashion (See Generally Figs. 3-6 and col. 5, lines 34-47, col. 7, lines 54-62 and claim 7).

Regarding claim 3, Sones discloses the image detector wherein the at least one of individual photosensors and photosensor areas of each carrier layer (86)(88) are arranged at least one of congruently and in overlapping fashion at least one of above and below the at least one of individual photosensors and photosensor areas of the other carrier layers (See Generally Figs. 3-6).

Regarding claim 4, Sones discloses the image detector wherein the at least one of individual photosensors and photosensor areas of each carrier layer (86)(88) are arranged randomly, so that the at least one of the photosensors and photosensor areas which are arranged randomly at least one of the above and below the at least one of photosensors and photosensor areas of other carrier layers are jointly utilizable for the spatially resolved detection of the radiation to be detected (See Generally Figs. 3-6 and col. 8, lines 45-59).

Regarding claim 6, Sones discloses the image detector comprising: at least one luminescent material layer, including a nonvanishing transparency to the electromagnetic radiation, wherein the at least one luminescent material layer is adapted to output a radiation of changed wavelength upon being excited by the electromagnetic radiation, the radiation of changed wavelength being detectable by the photosensors (col. 9, lines 15-28).

Regarding claim 7, Sones discloses the image detector wherein at least one of the at least one luminescent material layer and carrier layer forms a common electrical contact for adjoining photosensors (See Generally Figs. 3-6).

Regarding claim 11, Sones discloses the image detector comprising: at least one luminescent material layer, including a nonvanishing transparency to the electromagnetic radiation, wherein the at least one luminescent material layer is adapted to output a radiation of changed wavelength upon being excited by the electromagnetic radiation, the radiation of changed wavelength being detectable by the photosensors (col. 9, lines 15-28).

Regarding claim 12, Sones discloses the image detector wherein at least one of the at least one luminescent material layer and carrier layer forms a common electrical contact for adjoining photosensors (See Generally Figs. 3-6).

Regarding claim 14, Sones discloses the image detector comprising: at least one luminescent material layer, including a nonvanishing transparency to the electromagnetic radiation, wherein the at least one luminescent material layer is adapted to output a radiation of changed wavelength upon being excited by the electromagnetic radiation, the radiation of changed wavelength being detectable by the photosensors (col. 9, lines 15-28).

Regarding claim 15, Sones discloses the image detector wherein at least one of the at least one luminescent material layer and carrier layer forms a common electrical contact for adjoining photosensors (See Generally Figs. 3-6).

Regarding claim 17, Sones discloses the image detector comprising: at least one luminescent material layer, including a nonvanishing transparency to the electromagnetic radiation, wherein the at least one luminescent material layer is adapted to output a radiation of changed wavelength upon being excited by the electromagnetic radiation, the radiation of changed wavelength being detectable by the photosensors (col. 9, lines 15-28).

Regarding claim 18, Sones discloses the image detector wherein at least one of the at least one luminescent material layer and carrier layer forms a common electrical contact for adjoining photosensors (See Generally Figs. 3-6).

Regarding claim 25, Sones discloses the image detector wherein the image detector is for detecting x-ray radiation (col. 6, lines 5-25).

Regarding claim 26, Sones discloses an image detector for detecting electromagnetic radiation, comprising: a plurality of layers, each layer including at least one photosensor (96), wherein each of layer (92) and photosensor (96) include a nonvanishing transparency to the electromagnetic radiation, and wherein the plurality of layers are arranged one above another, such that the electromagnetic radiation is passable there-through, one after another (See Generally Figs. 3-6 and col. 9, lines 63-68 and col. 10, lines 1-15).

Regarding claim 27, Sones discloses the image detector wherein the image detector is for detecting x-ray radiation (col. 6, lines 5-25).

Regarding claim 28, Sones discloses the image detector wherein each layer includes a plurality of photosensors, arranged spatially on a respective layer, wherein

the plurality of photosensors are adapted to generate electrical signals in a manner dependent on the detection of electromagnetic radiation, and wherein the plurality of photosensors are jointly electrically contact-connected at least one of individual and within individual areas, so that the electromagnetic radiation is adapted to be detected in spatially resolved fashion (See Generally Figs. 3-6 and col. 5, lines 34-47, col. 7, lines 54-62 and claim 7).

Regarding claim 29, Sones discloses the image detector wherein the at least one of individual photosensors and photosensor areas of each layer are arranged at least one of congruently and in overlapping fashion at least one of above an below the at least one of individual photosensors and photosensor areas of the other layer (See Generally Figs. 3-6).

Regarding claim 30, Sones discloses the image detector wherein the at least one of individual photosensors and photosensor areas of each carrier layer (86)(88) are arranged randomly, so that the at least one of the photosensors and photosensor areas which are arranged randomly at least one of the above and below the at least one of photosensors and photosensor areas of other carrier layers are jointly utilizable for the spatially resolved detection of the radiation to be detected (See Generally Figs. 3-6 and col. 8, lines 45-59).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Sones et al (US 4,709,382)* as applied to claim 1 above, and further in view of *Yu et al (US 2002/0017612 A1).*

Regarding claim 5, *Sones* discloses each detector element comprises a photodiode and overlying each photodiode is a scintillation material responsive to x-rays to produce visible light energy (col. 9, lines 15-17). *Sones* does not disclose of an organic photodiode used as a photosensor. Yu discloses utilizing an organic photodiode to detect high-energy photons, electrons, x-rays and ionized particles a characteristic of x-rays, beta particles and ionized particles are characteristic of gamma radiation ([0120]). Yu teaches in addition to high photosensitivity, organic photodiodes show large dynamic range and relatively flat photosensitivity ([0013]). Therefore, it would have been obvious to modify the apparatus suggest by Sones to utilize an organic photodiode as suggest by Yu, to allow for a more versatile apparatus.

5. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Sones et al (US 4,709,382)* as applied to claim 1 above, and further in view of *Shahar et al (US 6,285,029 B1).*

Regarding claim 8, Sones discloses the image detector wherein the at least one of individual photosensors and photosensor areas of each carrier layer (86)(88) are arranged randomly, so that the at least one of the photosensors and photosensor areas which are arranged randomly at least one of the above and below the at least one of photosensors and photosensor areas of other carrier layers are jointly utilizable for the

spatially resolved detection of the radiation to be detected (See Generally Figs. 3-6 and col. 8, lines 45-59). Sones does not specifically disclose of layer thicknesses. Shahar discloses an image detector wherein the layer thicknesses of the photosensors increase in the order in which the electromagnetic radiation is adapted to pass through them one after the other (col. 3, lines 1-7, col. 6, lines 60-67 and col. 7, lines 1-7). Shahar teaches the process of stacking detector modules to produce good detector stack is in itself very reliable and the failure rate of this process is negligible. The detector module assembly constructed and operative according to the embodiment of the invention (Fig. 2a) allow any desired stopping power to be achieved, simply by increasing the effective thickness (col. 6, lines 60-67 and col. 7, lines 1-7). Therefore, it would have been obvious to modify the image detector disclosed by Sones, to allow for varied layer thicknesses, as suggested supra by Shahar, to allow for a more versatile apparatus.

Regarding claim 9, Shahar discloses an image detector wherein the layer thicknesses of the photosensors increase in the order in which the electromagnetic radiation is adapted to pass through them (col. 3, lines 1-7, col. 6, lines 60-67 and col. 7, lines 1-7).

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Sones et al (US 4,709,382)* as applied to claim 2 above, and further in view of *Yu et al (US 2002/0017612 A1).*

Regarding claim 10, *Sones* discloses each detector element comprises a photodiode and overlying each photodiode is a scintillation material responsive to x-rays to produce visible light energy (col. 9, lines 15-17). *Sones* does not disclose of an

organic photodiode used as a photosensor. Yu discloses utilizing an organic photodiode to detect high-energy photons, electrons, x-rays and ionized particles a characteristic of x-rays, beta particles and ionized particles are characteristic of gamma radiation ([0120]). Yu teaches in addition to high photosensitivity, organic photodiodes show large dynamic range and relatively flat photosensitivity ([0013]). Therefore, it would have been obvious to modify the apparatus suggest by Sones to utilize an organic photodiode as suggest by Yu, to allow for a more versatile apparatus.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Sones et al (US 4,709,382)* as applied to claim 3 above, and further in view of *Yu et al (US 2002/0017612 A1).*

Regarding claim 13, *Sones* discloses each detector element comprises a photodiode and overlying each photodiode is a scintillation material responsive to x-rays to produce visible light energy (col. 9, lines 15-17). *Sones* does not disclose of an organic photodiode used as a photosensor. Yu discloses utilizing an organic photodiode to detect high-energy photons, electrons, x-rays and ionized particles a characteristic of x-rays, beta particles and ionized particles are characteristic of gamma radiation ([0120]). Yu teaches in addition to high photosensitivity, organic photodiodes show large dynamic range and relatively flat photosensitivity ([0013]). Therefore, it would have been obvious to modify the apparatus suggest by Sones to utilize an organic photodiode as suggest by Yu, to allow for a more versatile apparatus.

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Sones et al (US 4,709,382)* as applied to claim 3 above, and further in view of *Yu et al (US 2002/0017612 A1).*

Regarding claim 16, *Sones* discloses each detector element comprises a photodiode and overlying each photodiode is a scintillation material responsive to x-rays to produce visible light energy (col. 9, lines 15-17). *Sones* does not disclose of an organic photodiode used as a photosensor. Yu discloses utilizing an organic photodiode to detect high-energy photons, electrons, x-rays and ionized particles a characteristic of x-rays, beta particles and ionized particles are characteristic of gamma radiation ([0120]). Yu teaches in addition to high photosensitivity, organic photodiodes show large dynamic range and relatively flat photosensitivity ([0013]). Therefore, it would have been obvious to modify the apparatus suggest by Sones to utilize an organic photodiode as suggest by Yu, to allow for a more versatile apparatus.

9. Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Sones et al (US 4,709,382)* as applied to claim 3 above, and further in view of *Shahar et al (US 6,285,029 B1).*

Regarding claim 19, Sones discloses the image detector wherein the at least one of individual photosensors and photosensor areas of each carrier layer (86)(88) are arranged randomly, so that the at least one of the photosensors and photosensor areas which are arranged randomly at least one of the above and below the at least one of photosensors and photosensor areas of other carrier layers are jointly utilizable for the spatially resolved detection of the radiation to be detected (See Generally Figs. 3-6 and

col. 8, lines 45-59). Sones does not specifically disclose of layer thicknesses. Shahar discloses an image detector wherein the layer thicknesses of the photosensors increase in the order in which the electromagnetic radiation is adapted to pass through them one after the other (col. 3, lines 1-7, col. 6, lines 60-67 and col. 7, lines 1-7). Shahar teaches the process of stacking detector modules to produce good detector stack is in itself very reliable and the failure rate of this process is negligible. The detector module assembly constructed and operative according to the embodiment of the invention (Fig. 2a) allow any desired stopping power to be achieved, simply by increasing the effective thickness (col. 6, lines 60-67 and col. 7, lines 1-7). Therefore, it would have been obvious to modify the image detector disclosed by Sones, to allow for varied layer thicknesses, as suggested supra by Shahar, to allow for a more versatile apparatus.

Regarding claim 20, Shahar discloses an image detector wherein the layer thicknesses of the photosensors increase in the order in which the electromagnetic radiation is adapted to pass through them (col. 3, lines 1-7, col. 6, lines 60-67 and col. 7, lines 1-7).

10. Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Sones et al (US 4,709,382)* as applied to claim 3 above, and further in view of *Shahar et al (US 6,285,029 B1)*.

Regarding claim 21, Sones discloses the image detector wherein the at least one of individual photosensors and photosensor areas of each carrier layer (86)(88) are arranged randomly, so that the at least one of the photosensors and photosensor areas which are arranged randomly at least one of the above and below the at least one of

photosensors and photosensor areas of other carrier layers are jointly utilizable for the spatially resolved detection of the radiation to be detected (See Generally Figs. 3-6 and col. 8, lines 45-59). Sones does not specifically disclose of layer thicknesses. Shahar discloses an image detector wherein the layer thicknesses of the photosensors increase in the order in which the electromagnetic radiation is adapted to pass through them one after the other (col. 3, lines 1-7, col. 6, lines 60-67 and col. 7, lines 1-7). Shahar teaches the process of stacking detector modules to produce good detector stack is in itself very reliable and the failure rate of this process is negligible. The detector module assembly constructed and operative according to the embodiment of the invention (Fig. 2a) allow any desired stopping power to be achieved, simply by increasing the effective thickness (col. 6, lines 60-67 and col. 7, lines 1-7). Therefore, it would have been obvious to modify the image detector disclosed by Sones, to allow for varied layer thicknesses, as suggested supra by Shahar, to allow for a more versatile apparatus.

Regarding claim 22, Shahar discloses the layer thicknesses of the photosensors increase in the order in which the electromagnetic radiation is adapted to pass through them (col. 3, lines 1-7, col. 6, lines 60-67 and col. 7, lines 1-7).

11. Claims 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Sones et al (US 4,709,382)* as applied to claim 4 above, and further in view of *Shahar et al (US 6,285,029 B1).*

Regarding claim 23, Sones discloses the image detector wherein the at least one of individual photosensors and photosensor areas of each carrier layer (86)(88) are arranged randomly, so that the at least one of the photosensors and photosensor areas

which are arranged randomly at least one of the above and below the at least one of photosensors and photosensor areas of other carrier layers are jointly utilizable for the spatially resolved detection of the radiation to be detected (See Generally Figs. 3-6 and col. 8, lines 45-59). Sones does not specifically disclose of layer thicknesses. Shahar discloses an image detector wherein the layer thicknesses of the photosensors increase in the order in which the electromagnetic radiation is adapted to pass through them one after the other (col. 3, lines 1-7, col. 6, lines 60-67 and col. 7, lines 1-7). Shahar teaches the process of stacking detector modules to produce good detector stack is in itself very reliable and the failure rate of this process is negligible. The detector module assembly constructed and operative according to the embodiment of the invention (Fig. 2a) allow any desired stopping power to be achieved, simply by increasing the effective thickness (col. 6, lines 60-67 and col. 7, lines 1-7). Therefore, it would have been obvious to modify the image detector disclosed by Sones, to allow for varied layer thicknesses, as suggested supra by Shahar, to allow for a more versatile apparatus.

Regarding claim 24, Shahar discloses an image detector wherein the layer thicknesses of the photosensors increase in the order in which the electromagnetic radiation is adapted to pass through them (col. 3, lines 1-7, col. 6, lines 60-67 and col. 7, lines 1-7).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Faye Polyzos whose telephone number is 571-272-2447. The examiner can normally be reached on Monday thru Friday from 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FP

OTILIA GABOR
PRIMARY EXAMINER